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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,086	02/02/2005	Norbert Herfert	29827/40801	8509
4743	7590	09/13/2006	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 233 S. WACKER DRIVE, SUITE 6300 SEARS TOWER CHICAGO, IL 60606			BERNSHTEYN, MICHAEL	
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 09/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/523,086

Applicant(s)

HERFERT ET AL.

Examiner

Michael Bernshteyn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 and 31 is/are pending in the application.
- 4a) Of the above claim(s) 20-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-27 and 31 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. Applicant's arguments, see remarks, filed September 1, 2006, with respect to the rejection(s) of claim(s) 1-19 under 35 U.S.C. 102(e) and 103(a) have been fully considered and are persuasive in view of the amended claim 1. Therefore, the final rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of WO 96/30442.
2. Claim 1 has been amended, claim 31 has been added, and claims 28-30 have been cancelled.
3. Claims 1-19 and 31 are active.

Claim Rejections - 35 USC § 102

4. The test of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.
5. Claims 1, 2, 7-10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Le-Khac et al. (WO 96/30442).

Le-Khac discloses a water-absorbent polymeric composition containing water-insoluble particles of material, which is substantially unreactive with the polymeric composition. The water-insoluble particles are preferably particles of TiO₂, clay or starch (abstract).

Le-Khac discloses that particular suitable copolymers for use in the production of the water-absorbing composition will contain from about 25 to about 75 percent

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recurring units of at least α,β -unsaturated monomer and from about 75 to about 25 percent recurring units of at least one copolymerizable monomer. Suitable α,β -unsaturated monomers are those bearing at least one pendant carboxylic acid unit or derivative of carboxylic acid unit. Derivatives of carboxylic acid units include carboxylic acid saltgroups, carboxylic acid amide groups, carboxylic acid imide groups, carboxylic acid anhydride groups and carboxylic acid ester groups (page 5, lines 5-16).

The copolymer is then preferably cross-linked either internally or using an external cross-linking agent (page 8, lines 1-2).

Le-Khac discloses that **clay** or starch may be added in an amount of up to 25 wt.% (page 13, lines 13 and page 16, claims 12 and 13) and exemplifies **bentonite** (Example 4, Table 4, page 13, line 18 through page 14, line8).

Regarding the superabsorbent polymer limitations in view of substantially identical superabsorbent polymer, surface crosslinking agent, a clay, and a process producing such polymer being used by both Le-Khac and the applicant, it is the examiner position to believe that the product, i.e. water-absorbent polymeric composition of Le-Khac is substantially the same as the superabsorbent polymer recited in claim 1, even though obtained by a different process, consult *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

6. The test of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.

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7. Claim 1-5, 7-17 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Sun et al. (U.S. Patent 6,124,391) in view of Le-Khac et al. (WO 96/30442).

Sun discloses a particulate material composition of superabsorbent polymer particles, wherein less than about 60% by weight of the superabsorbent polymer particles will pass through a U.S. Standard 50 mesh sieve. The composition has anti-caking properties and also reduced dusting. The composition can be produced by **mixing the superabsorbent polymer particles with an inorganic powder, such as clay** (abstract).

Sun discloses superabsorbent polymers, namely polymers that absorb over 20 times their weight in water, which superabsorbent polymers have unique anti-caking characteristics from admixing with a fine inorganic powder (col. 1, lines 7-11), and also a method for providing anti-caking characteristics to SAP particles. The method comprises (A) providing SAP particles of such size that less than about 60% of the polymer particles, by weight, will pass through a U.S. Standard 50 mesh sieve with 300 micrometer openings, (B) mixing an inorganic powder with the polymer particles in an amount of between about 0.2% and about 10% by weight of the polymer particles, to create a particulate material composition, and (C) achieving anti-caking characteristics in that more than about 90% of the composition particles, by weight, will pass through a U.S. Standard 12 mesh sieve with 1700 micrometer openings after at least about 3 hours at about 36°C and about 77% RH (col. 3, lines 46-59). A mixture of SAP particles

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and inorganic powder is referred to as a "particulate material composition" (col. 4, lines 47-48).

With regard to the limitations of instant claims 1 and 2, Sun discloses that the SAP may be obtained by polymerizing at least about 25%, more preferably **about 55 to about 99.9% by weight of monomers** having olefinically-unsaturated carboxylic and/or sulfonic acid groups. Such acid groups include, but are not limited to, **acrylic acids**, **methacrylic acids**, 2-acrylamido-2-methylpropane sulfonic acid, and mixtures thereof. The acid groups are present as salts, such as sodium, potassium, or ammonium salts.

Suitable network X-linking agents useful in making the SAPs are those, which have at least two ethylenically unsaturated double bonds. Suitable kinds of network X-linking agents include, but are not limited to, acrylate and methacrylate of polyols (such as butanediol diacrylate, hexanediol dimethacrylate, polyglycol diacrylate, trimethylolpropane triacrylate, allyloxy polyethylene glycol methacrylate, and ethoxylated trimethylolpropane triacrylate, etc. (col. 5, lines 32-53). Furthermore, depending on the desired end use, the SAP may have a water-soluble polymeric component. The content may range from **above 0 up to about 30% by weight** of a component that includes, but is not limited to, partially or complete saponified polyvinyl alcohol, polyvinyl pyrrolidone, starch, starch derivatives, polyglycols, **polyacrylic acids**, and combinations thereof (col. 5, lines 55-61).

In connection with the particle shape of the SAP, there are no specific limitations. The SAP may be the dried resultant obtained either by inverse or suspension polymerization, or by solvent or solution polymerization. A typical particle size

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distribution ranges between **about 20 and about 2000 micrometers**, preferably between about 40 and about 890 micrometers, and more preferably between about 90 and about 850 micrometers (col. 6, lines 8-11). In order to coat the particulate SAP with a surface X-linking agent, the polymer may be mixed with an aqueous-alcoholic solution of the alkylene carbonate surface X-linking agent. It is also possible to apply the alkylene carbonate surface X-linking agent from a powder mixture, for example, with an inorganic carrier material, such as SiO_2 (col. 6, lines 28-30 and 48-50).

The inorganic powder is preferably mixed with the SAP particles in an amount sufficient to achieve anti-caking characteristics. Typically, this is an amount of between **about 0.2% to about 10%**, more preferably about 0.5% to about 7%, and even more preferably about 0.9% to about 5.5% (i.e., between about 0.9 to about 5.5 parts of inorganic powder per 100 parts) by weight of the SAP particles. The inorganic powder may be mixed with the particles of SAP **in a substantially dry state**, or with the addition of a liquid such as water, in amounts typically of up to about 10 parts by weight of the liquid to 100 parts by weight of the SAP particles (col. 7, lines 24-36). The inorganic powder and the particles of SAP can be **intermixed** in any suitable manner. Suitable manners include, but are not limited to, physical intermixing employing the mixers that are employed for the optional surface X-linking agent. Thus, if surface X-linking is going to be effected, (1) the inorganic powder may be mixed with the precursor SAP particles **prior to mixing and heating with the surface X-linking agent**, or (2) the precursor SAP particles may be **mixed and heated with the surface X-linking agent** followed by mixing with the inorganic powder (col. 7, lines 37-47).

In Example 1 the particulate precursor SAP was screened to 95 to 850 micrometers, and then, 200 grams were mixed with 2 grams of powdery **kaolin** (NeoGen 2000) in a Bausch bread kneader for 5 minutes at speed 3. An aqueous solution containing 20% by weight of ethylene carbonate (surface X-linking agent) was then added by spraying (col. 11, lines 58-63). In Example 5 the mixture was then blended for 2 hours, transferred to an oven and heated at 190⁰C for 25 minutes to complete the surface X-linking treatment. The final particulate material composition (of AP-88 and kaolin) was sieved to a PSD ranging from about **150 to 850 micrometers** (col. 12, lines 34-38).

With regard to the limitations of instant claims 1, 2 and 31, Sun discloses mixing an inorganic powder with the polymer particles in an amount of between about 0.2% and about 10% by weight of the polymer particles (col. 3, lines 51-54), but he does not disclose the amount of 12 to about 35% according the amended claim 1.

Le-Khac discloses a water-absorbent polymeric composition containing water-insoluble particles of material, which is substantially unreactive with the polymeric composition. The water-insoluble particles are preferably particles of TiO₂, clay or starch (abstract).

Le-Khac discloses that clay or starch may be added in an amount of up to 25 wt.% (page 13, lines 13 and page 16, claims 12 and 13).

Both references are analogous art because they are from the same field of endeavor concerning new particulate material compositions (of the SAP particles and the inorganic powder), which may be employed for any traditional use for which SAPs

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are employed. For instance, such uses include, but are not limited to, use in an absorbent article such as a sanitary article (i.e., diapers, incontinence garments, etc.) (US'391, col. 7, lines 49-53 and WO'442, page 1, lines 6-18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate clay in the amount of up to 25 wt.% as taught by Le-Khac in Sun's superabsorbent polymers in order to improve gel strength and include lower percent extractables, to receive economic saving in the production of the polymeric composition, and further, there is little or no deleterious affect on other properties such as absorption and wicking (WO'442, page 13, lines 2-7, and Example 4, page 13, line 18 through page 14, line 7), and thus to arrive at the subject matter of instant claims 1, 2 and 31.

With regard to the limitations of instant claims 3 –5 and 12-17, Sun discloses that the fine inorganic powder may comprise any of the clays (i.e., hydrated **aluminum silicates**, generally of the formula $H_2Al_2Si_2O_8 \cdot H_2O$). Suitable clays are **kaolin clays** (col. 7, lines 10-13). The inorganic powder is preferably mixed with the SAP particles in an amount sufficient to achieve anti-caking characteristics. Typically, this is an amount of between **about 0.2% to about 10%**, more preferably about 0.5% to about 7%, and even more preferably about 0.9% to about 5.5% (i.e., between about 0.9 to about 5.5 parts of inorganic powder per 100 parts) by weight of the SAP particles.

With regard to the limitations of instant claims 7-10, Sun disclose that additional useful monomers for making the SAPs include from above 0 up to about 40% by weight of acrylamide, methacrylamide, maleic acid, maleic anhydride, esters (such as

hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxypropyl methacrylate, and dimethyl-aminoalkyl-methacrylate), dimethyl-aminopropyl acrylamide, and acrylamidopropyl trimethylammonium chloride. Percentages below about 40% of these monomers are desirable as percentages above 40% typically will have a detrimental effect and deteriorate the swell capacity of the resultant SAP (col. 5, lines 19-32).

Furthermore, depending on the desired end use, the SAP may have a water-soluble polymeric component. The content may range from above 0 up to about 30% by weight of a component that includes, but is not limited to, partially or complete saponified polyvinyl alcohol, polyvinyl pyrrolidone, starch, starch derivatives, polyglycols, polyacrylic acids, and combinations thereof. The molecular weight of the component is not critical, provided that it is water-soluble. Preferred water-soluble polymeric components are starch, polyvinyl alcohol, and mixtures thereof. Preferably, the content of the water-soluble polymeric component in the SAP ranges from about 1 to about 5% by weight, especially if starch and/or polyvinyl alcohol are present as the water-soluble polymeric component. Also, the water-soluble polymeric component may be present as a graft polymer having the acid-groups-containing polymer (col. 5 line 55 through col. 6, line 3).

With regard to the limitations of instant claim 11, Sun discloses that the acid groups are typically **neutralized to at least about 25-mol %**. Preferably, the extent of neutralization is to at least about 50-mol %. More particularly, the preferred SAP has been formed from X-linked acrylic acid or methacrylic acid, which has been neutralized to an extent of **about 50 to about 80-mol %**. Suitable neutralizing agents are

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hydroxides and/or carbonates of alkaline earth metals and/or alkali metals, for instance, NaOH (col. 5, lines 3-18).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Sun et al. and Le-Khac as applied to claims 1-5, 7-17 and 31 above.

With regard to the limitation of instant claim 6, the combined teaching of Sun and Le-Khac does not disclose that less than 5% by weight of the particles have a diameter of 200 μ M or less.

It is noted that the amount of the diameter of the particles is a result effective variable, and therefore, it is within the skill of those skilled in the art to find the optimum value of a result effective variable, as per In re Boesch 205 USPQ 215 (CCPA 1980). See also In re Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382: "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."

9. Claim 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Sun et al. and Le-Khac et al. as applied to claims 1-5, 7-17 and 31 above and further in view of Beerse et al. (US 2002/0006886).

The combined teaching of Sun and Le-Khac does not disclose the particles wherein the organophilic clay contains long chain alkyl radicals having 14 to 22 carbon atoms.

Beerse discloses that the term 'tallow' refers to an alkyl group derived from tallow fatty acids (usually hydrogenated tallow fatty acids), which generally have

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mixtures of alkyl chains in the C₁₂ to C₁₄ range. Examples of quaternary ammonium salts derived from these tallow sources include ditallow dimethyl ammonium chloride, ditallow dimethyl ammonium methyl sulfate, di(hydrogenated tallow) dimethyl ammonium chloride, di(hydrogenated tallow) dimethyl ammonium acetate, ditallow dipropyl ammonium phosphate, ditallow dimethyl ammonium nitrate, tallow ammonium chloride, etc. (page 21, [0228]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate organophilic clay selected from tallow derivatives as taught by Breese in Sun and Le-Khac's superabsorbent polymers in order to obtain a superabsorbent polymers with additional linkages, or hydroxyl, or amino group substituents (e.g., the alkyl groups can contain polyethylene glycol and polypropylene glycol moieties) (page 21, [0224]).

Thus, the combination of Sun, Le-Khac and Breese renders the instant claims 1-19 and 31 *prima facie* obvious absent evidence of unexpected results commensurate in scope to the claims.

Conclusion

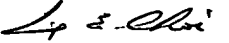
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
Art Unit 1713

MB
09/11/2006


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PRIMARY EXAMINER